STEREO DOUBLE AUTOREVERSE CASSETTE DECK

X-E9

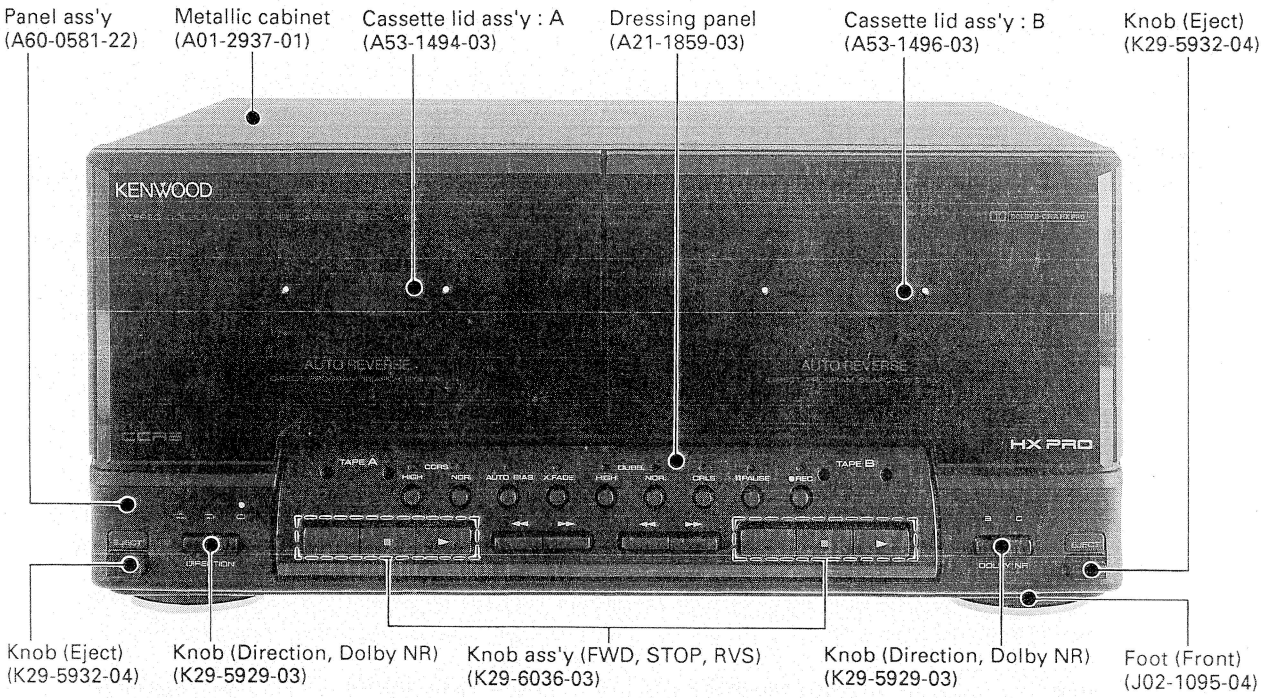
SERVICE MANUAL

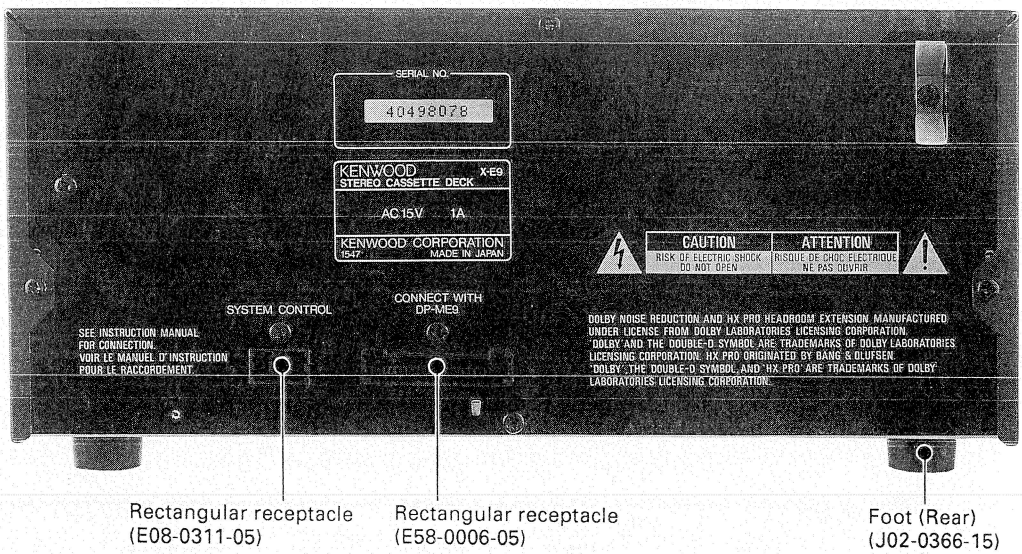
(UD-952)

KENWOOD

© 1994-6 PRINTED IN KORIA

B51-4926-00 (K) 3934





PRECAUTIONS FOR REPAIR

- Since power of this equipment is supplied by B-E9 of the power amplifier of the stereo system, these equipment and the jig (RM-90PS + UA-93AD) are needed when doing the repairs.
- Refer to RXD-C3/C3L service manual, if you want to know more information of CASSETTE MECHANISM DESCRIPTION.

X-E9

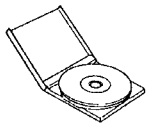
CONTENTS/ACCESSORIES

CONTENTS

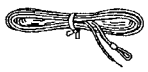
ACCESSORIES 2
BLOCK DIAGRAM 3
CIRCUIT DESCRIPTION 4
ADJUSTMENT ..... 8, 11~13
ADJUSTES 10
WIRING DIAGRAM 14
PC BOARD (COMPONENT SIDE VIEW) 15
SCHEMATIC DIAGRAM 17
EXPLODED VIEW : MECHANISM 24
EXPLODED VIEW (UNIT) 25
PARTS LIST 26
SPECIFICATIONS ..... BACK COVER

ACCESSORIES

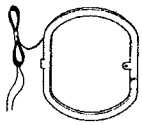
- Sound enhancement CD 1
  (W01-0861-05)



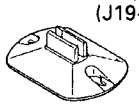
- FM indoor antenna 1
  (T90-0182-15)



- AM loop antenna ass'y .. 1
  (T90-0195-05)



Loop antenna stand
(J19-3645-05)



- Parallel cord (19P) 1
  (E30-2738-05)

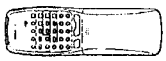
- Parallel cord (5P) 1
  (E30-2772-05)

- Speaker cords 2
  (E30-5168-05 : **M,T,X,P,E**)
  (E30-5172-05 : **K**)

- Antenna adaptor 1
  (T90-0198-05)
  For U.K. and Europe.

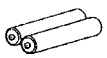
- Magazine 1
  (J19-3394-13)

- Remote control unit 1
  (X94-1050-61 : RC-E9)

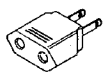


Battery cover
(F07-0721-33)

- Batteries (R03/AAA) 2
  (–)

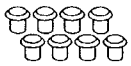


- AC plug adaptor 1
  (E03-0115-05)



Except for some areas
For the unit with a European AC plug in areas other than Europe.

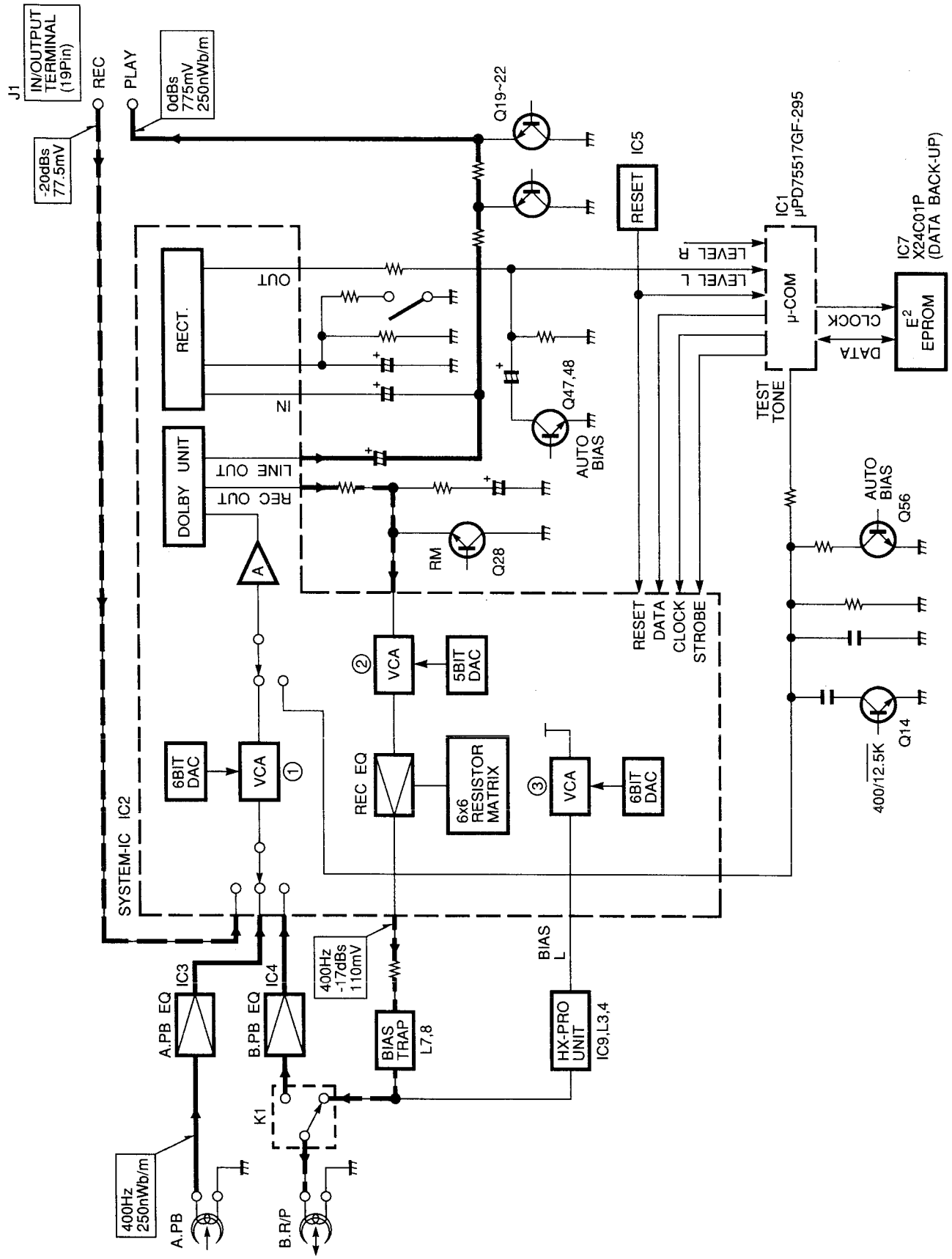
- Caps 8
  (B09-0171-04)



To be used when installing the optional OMNI-A5.
Omni speakers onto the front speakers.

System name	Power amp/GE	Pre-amp/Tuner	**Cassette deck**	CD player	System carton box (Parts No.)	Speaker (Other package)
UD-952	B-E9	C-E9	**X-E9**	DP-ME9	H60-0266-04	LS-E9

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

1. Deck Microprocessor : μPD75517GF-259 (X28- IC1)

1-1. Explanation of functions

Microprocessor (μPD75517GF-295) for controlling the deck (X-E9) of UD-952.

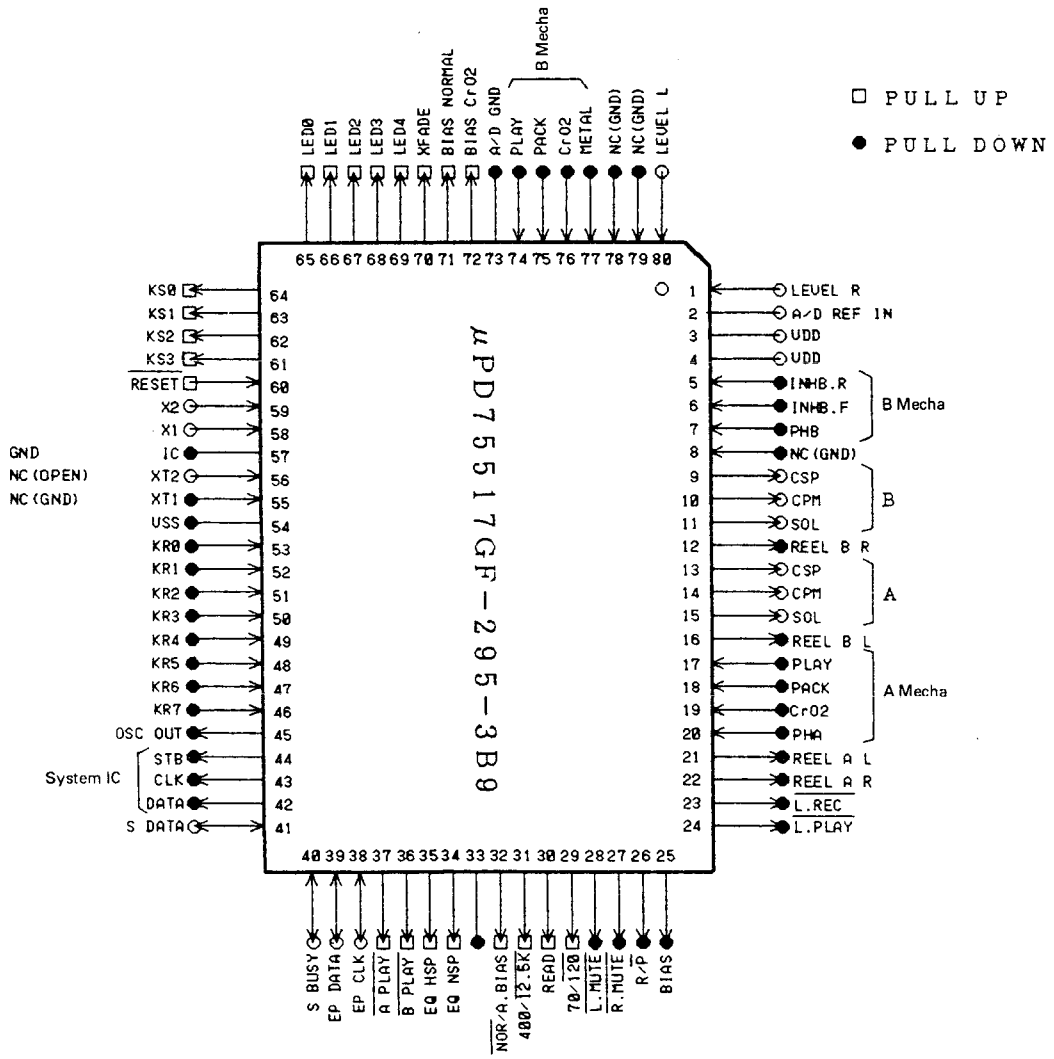
- **Features**

1) Double reverse system. One deck (B deck) for recording and playing.
2) Equipped with CCRS, double-speed CCRS, cross fading and CRLS.
3) Equipped with DPSS. FF search, RWD search, 1 tune repeat, RWD play, auto REC mute, dash and play, REREC standby.
4) Normal dubbing, high-speed dubbing.
5) Electronic volume control.
6) Relay play.
7) Timer play and REC.
8) Dolby NR B/C.
9) Memory for each REC volume source.
10) Auto biasing.
11) Edit, AI edit.
12) Multi-edit (Single CD), program edit (Magazine).

- **Objects of control**

1) Mechanism: D40-1359-05 (A mechanism)
D40-1360-05 (B mechanism)
2) IC: System IC HA12167FB
3) Indication: LED
4) Recording/Playing circuit unit

1-2. Terminal connection diagram



CIRCUIT DESCRIPTION

1-3. Terminal function

Pin No.	Pin name	I/O	Description
1	LEVEL R	I	CCRS, CRLS, DPSS Rch signal input.
2	AVREF	–	A/D converter reference voltage input (VDD).
3, 4	VDD	–	Positive power supply terminals.
5	INHB R	I	B mechanism RVS recording inhibit detection. L : Inhibited
6	INHB F	I	B mechanism FWD recording inhibit detection. L : Inhibited
7	PHB	I	B mechanism turn detection input.
8	NC	O	Unused (GND).
9	CSP B	O	B capstan motor changeover. H : Normal, L : High speed
10	CPM B	O	B capstan motor control. H : ON
11	SOL B	O	B solenoid control. H: ON
12	BREEL R	O	B reel LED control (Right).
13	CSP A	O	A capstan motor changeover. H : Normal, L : High speed
14	CPM A	O	A capstan motor control. H : ON
15	SOL A	O	A solenoid control. H : ON
16	BREEL L	O	B reel LED control (Left).
17	PLAY A	I	A mechanism head position detection. H : PLAY
18	PACK A	I	A mechanism half detection. H : Half detected
19	CrO_2 A	I	A mechanism chrome tape detection. H : Normal
20	PHA	I	A mechanism turn detection input.
21	AREEL L	O	A reel LED control (Left).
22	AREEL R	O	A reel LED control (Right).
23	$\overline{\text{L. REC}}$	O	Input/Output line control. L : REC
24	$\overline{\text{L. PLAY}}$	O	Input/Output line control. L : PLAY
25	BIAS	O	Bias ON/OFF control. H : ON
26	R/$\overline{\text{P}}$	O	B mechanism REC/PLAY changeover. H : REC
27	$\overline{\text{R MUTE}}$	O	REC mute control. L : ON
28	$\overline{\text{L MUTE}}$	O	Line mute control. L : ON
29	70/$\overline{\text{120}}$	O	Bias changeover. H : 70μs
30	READ	O	ON in auto bias play. H : ON
31	400/$\overline{\text{12.5K}}$	O	Rectangular wave filter changeover. H : 400Hz
32	$\overline{\text{NOR}}$/A. BIAS	O	OSC oscillation ON/OFF control. H : ON
33	VSS	–	GND.
34	EQ NSP	O	REC EQ SPEED changeover. H : Normal speed
35	EQ HSP	O	REC EQ SPEED changeover. H : High speed
36	$\overline{\text{B PLAY}}$	O	B head changeover. L : B head ON
37	$\overline{\text{A PLAY}}$	O	A head changeover. L : A head ON
38	EPROM CLK	I/O	EPROM clock input/output.
39	EPROM DATA	I/O	EPROM data input/output.
40	S BUSY	I/O	Serial busy input/output.
41	S DATA	I/O	Serial data input/output.
42	DATA	O	System IC serial data output.
43	CLK	O	System IC clock output.
44	STB	O	System IC strobe signal input.
45	OSC OUT	O	Rectangular waveform output terminal (400Hz or 12.5kHz).
46~53	KR7~KR0	I	Key return signal input. H : ON
54	VSS	–	GND.
55	XT1	–	Unused (GND).
56	XT2	–	Unused (OPEN).
57	IC	–	Unused (GND).
58, 59	X1, X2	–	Clock oscillation element connecting terminals.
60	$\overline{\text{RESET}}$	I	Reset signal input. L : Reset
61~64	KS3~KS0	O	Key scan signal output. L : Scan
65~69	LED3~LED0, LED4	O	LED drive output. L : Lighting up

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Description
70	XFADE	O	Cross fading control (For erase head control ON/OFF). H : ON
71	BIAS NORM	O	REC bias normal. H : Normal
72	BAIS CrO_2	O	REC bias CrO_2. H : CrO_2
73	AVss	–	A/D converter reference potential input (GND).
74	PLAY B	I	B mechanism head position detection. H : PLAY
75	PACK B	I	B mechanism half detection. H : Half detected
76	CrO_2 B	I	B mechanism chrome tape detection. H : Normal
77	METAL	I	B mechanism metal tape detection. L : Metal
78, 79	NC	I	Unused (GND).
80	LEVEL L	I	CCRS, CRLS, DPSS Lch signal input.

1-4. Key matrix

	KS0	KS1	KS2	KS3
KR0	A ▶	A. BIAS	B ●	B ▶
KR1	A ◀	CCRS	HI. DUB	B ▶▶
KR2	A ■	HI. CCRS	❚❚	B ■
KR3	–	–	CRLS	–
KR4	A ▶▶	DIR	⧓	B ◀◀
KR5	A ◀◀	X-FADE	NOR. DUB	B ◀
KR6	VOLMAX	–	CALIB	LIMITER
KR7	TEST1	A. ADJUST	M. ADJUST	–

Note :
A. ADJUST : For self-adjustment
M. ADJUST : For manual adjustment
VOLMAX : For electronic VOL MAX
LIMITER : Self-adjustment range limiting mode (When shorted)
(CALIB) : 400Hz oscillation keep in sensitivity correction mode

1-5. LED matrix

	KS0	KS1	KS2	KS3
LED0	⊃	HI. CCRS	CRLS	⧓ C
LED1	⇄	CCRS	NOR. DUB	⧓ B
LED2	A ◀	–	B ●	B ▶
LED3	A ▶	X-FADE	B ❚❚	B ◀
LED4		A. BIAS	HI. DUB	–

2. Test Mode

2-1. Test 1 mode (For body)

- **Setting**

Setting 1. Turn on the power with the test pins TP7 and TP10 of (X28-) shorted by a diode. (⑩ →|– ⑦)
The direction is set with the mode.

- **Resetting**

Resetting 1. Push the pause key.
Resetting 2. Disconnect the plug.

If either of the above resetting methods 1 and 2 is taken, the test mode is reset perfectly, regardless of the setting of the diode jig. The back-up system is initialized.

- **Specifications**

The system is set in the test mode, regardless of the position of the switches and mounting of a tape. Even if the head is raised, the following operation is performed after the initial setting.

1) Initial setting

The REC level is set to the center (–15dB).
After the power is turned on, all the lamps are turned on for 1.5 sec.

2) 4-sec REC

If the REC key is pushed, the system records for 4 sec. Then, it rewinds to the REC starting position and plays back automatically.
The operation of the REC key is accepted infinitely.
If the REC key is pushed during the 4-sec REC operation, the system records further for 4 sec, then returns to the starting position of the first 4-sec REC operation and plays back.

CIRCUIT DESCRIPTION

3) Play for tape speed adjustment
(Common to A and B mechanisms)

If the FF key is pushed, the system plays forward at the high speed.

If the FWD PLAY key pushed, the system plays forward at the normal speed.

If the two keys are pushed alternately while the mechanism is playing, the speed is changed without lowering the head.

4) Increase and decrease of electronic volume

If the HI-DUB key is pushed, the volume is increased ($-\infty \rightarrow -15dB \rightarrow 0dB$).

If the NOR-DUB key is pushed, the volume is decreased ($0dB \rightarrow -15dB \rightarrow -\infty$).

5) NOR-CCRS
(Confirmation of lowering of REC volume level)

If the NOR-CCRS key is pushed, recording is paused. If an excessive input is applied, the REC level is lowered.

The LED flashes while this function is turned on.

6) 4-sec DOLBY REC
(For checking recording frequency)

If the HI-CCRS key is pushed, the chrome SW or metal SW is detected, then the following operation starts.

When a normal tape is used

The system records for 4 sec with the dolby turned off, then returns to the REC starting position and plays back.

The system plays back with the dolby turned off.

When a chrome tape is used

The system records for 4 sec with the dolby C turned on, then returns to the REC starting position and plays back.

The system plays back with the dolby C turned on.

When a metal tape is used

The system records for 4 sec with the dolby B turned on, then returns to the REC starting position and plays back.

The system plays back with the dolby B turned on.

After the 4-sec play, the system continues playing with the current dolby setting.

If the STOP key is pushed, the operation is stopped and the dolby is turned off.

The system enters this operation mode when the HI-CCRS key is pushed even it is recording.

7) Detection of wrong recording by B mechanism

Insert a tape, the recording inhibiting claw of which is broken, in the B deck, and check the operation of the REC INH. SW by the PLAY SW LED of the B deck.

B PLAY LED

(REV) (FWD)

◀ ▶ : Normal.

◀ ▷ : FWD REC INH. SW is broken.

◁ ▶ : RVS REC INH. SW is broken.

The above operation must be performed even if there is not a half.

(◁ ▷ : Lit [ON], ◀ ▶ : OFF)

8) Check of leaf SW of A mechanism

Check the operation of the Half detecting SW and Chrome detecting SW by the PLAY SW LED of the A deck.

A PLAY LED

(REV) (FWD)

◁ ▶ : Chrome detecting SW ON, Half detecting SW OFF.

◁ ▷ : Chrome detecting SW ON, Half detecting SW ON.

◀ ▷ : Chrome detecting SW OFF, Half detecting SW ON.

◀ ▶ : Chrome detecting SW OFF, Half detecting SW OFF.

(◁ ▷ : Lit [ON], ◀ ▶ : OFF)

2-2. Initial condition

Item	Condition	Item	Condition
Dolby ON/$\overline{\text{OFF}}$	OFF	Electronic volume	-15dB
R/P	PLAY	OSC OUT	OFF
A play	SET	MPX $\overline{\text{ON}}$/OFF	ON
B play	SET	XFADE	OFF
EQ NOR speed	ON	$\overline{\text{NOR}}$/A. BIAS	SET
EQ HI speed	OFF	70/$\overline{120}$	120
$\overline{\text{REC MUTE}}$	ON	SOL	OFF
$\overline{\text{LINE MUTE}}$	ON	CPM	ON (1 sec) → OFF
BIAS	OFF	$\overline{\text{CSP}}$	Normal
Selector	TUNER		

- **Initial setting condition**

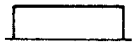
After setting in the adjustment mode (Automatic adjustment, Self adjustment) or test mode (1, Synchro), disconnect the power plug and connect it again, and the system is set under the initial condition.

ADJUSTMENT

ADJUSTMENT PROCEDURE

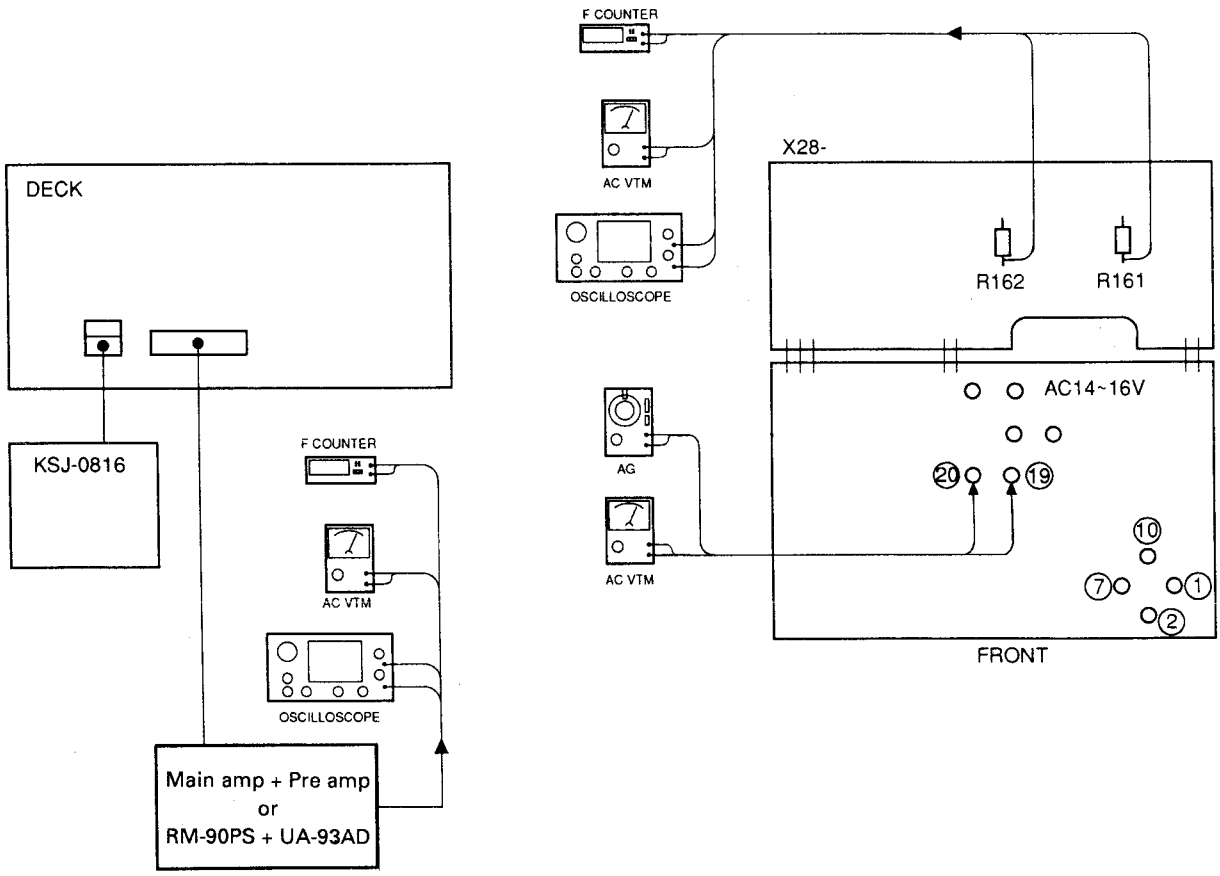
(1) Supply AC 14-16 V power from the main amplifier or jig.

(2) In the case of automatic adjustment, prepare a Dolby level tape (TCC−130 or MTT−150) as well as a tape equivalcnt to SCC−2280.

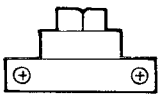
DOLBY LEVEL CALIBRATION	TCC−130 MTT−150	DOLBY B · TYPE TONE 200 nwb/m	DOLBY B · TYPE TONE 
DOLBY LEVEL + Alignment	SCC−2280	DOLBY B−TYPE TONE 200 nwb/m	

(3) If a synchronization check jig is available, connect it (KSJ-0816)

Connection diagram



ADJUSTMENT

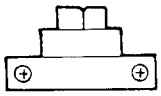
No.	ITEM	INPUT SETTING	OUTPUT SETTING	CASSETTE TAPE DECK SETTING	ALIGNMENT POINTS	ALIGN FOR	FIG.
Unless otherwise specified, set the respective switches as follows: **TAPE: NORMAL DOLBY: OFF**						**0dBs=0.775V**	
I Cassette mechanism unit (Adjustment of the REC/PLAY head)							
<1>	Demagnetization and cleaning	—	—	Power:OFF Demagnetization, cleaning, PLAY	Recording head, erase head, capstan, pinch roller	Demagnetize the REC/PLAY head with the head eraser. Clean the REC/PLAY head, erase head, capstan and pinch roller using a cotton swab slightly dampped with alcohol.	
<2>	Azimuth of the REC/PLAY head	SCC-1727 TCC-153 MTT-114 10kHz, -10dB	—	PLAY	 FWD RVS	Adjust the output to maximum and adjust the azimuth adjustment screw for the Lissajous waveform pattern of the oscilloscope to become close to a 45° straight line.	
II PC BOARD ADJUSTMENT **(Note) Carry out the double speed adjustment in the first place.**							
<1>	TAPE SPEED (HI SPEED)	TCC-110 MTT-111 SCC-1727 3kHz	—	※ (1)TEST MODE (2) SYNCRO TEST MODE	VR 1 (A) VR 2 (B)	Adjust the tape speed so that 6kHz is obtained at the center of the tape.	
<2>	TAPE SPEED (NORMAL)				VR 3 (A) VR 4 (B)	Adjust the tape speed so that 3kHz is obtained at the center of the tape.	

※

1. Short circuit PT ⑩ —▷|— ⑦ and turn the POWER ON. FWD KEY: NORMAL SPEED FF KEY: HI SPEED.

2. Synchronization test mode (KSJ—0816)
   1) Enter E040H → Synchronization test ON state
   2) A DECK FWD PLAY E010H
   3) A DECK HI SPEED E018H VR 1 6 kHz
   4) A DECK NORMAL E017H VR 3 3 kHz
   5) A DECK STOP E014H
   6) B DECK NORMAL E020H
   7) B DECK HI SPEED E028H VR 2 6 kHz
   8) B DECK NORMAL E027H VR 4 3 kHz
   9) B DECK STOP E024H
   10) DECK Synchro test OFF E041H

AJUSTES

Núm.	ÍTEM	AJUSTES DE ENTRADA	AJUSTES DE SALIDA	AJUSTES DEL DECK DE CASETES	PUNTOS DE ALINEACIÓN	ALINEACIÓN PARA	FIG.
A menos que se especifique lo contrario, el ajuste de los controles respectivos es el siguiente: **CINTA: NORMAL, DOLBY: DESACTIVADO** **0dBs=0.775V** **I. UNIDAD DEL MECANISMO DEL CASETE** **(Adjuste de la cabeza grabadora/reproductora [REC/PLAY] .)**							
[1]	DESMAGNETIZACIÓN Y LIMPIEZA	–	–	ALIMENTACIÓN : DESCONECTADA Limpieza, Desmagnetización, Reproducción	Cabeza grabadora Cabeza borradora Eje de arrastre Rodillo compresor	Desmagnetice la cabeza Grabadora/Reproductora con el borradora de cabezas. Limpie la cabeza Grabadora/ Reproductora, cabeza borradora, eje de arrastre, y rodillo compresor utilizando un palillo de cabeza de algodón Ligeramente humedecido en alcohol.	
[2]	ACIMUT DE LA CABEZA GRABADORA/ REPRODUCTORA	SCC-1727 TCC-153 MTT-114 10kHz, –10dB	–	REPRODUCCIÓN	 FWD RVS	Ajuste la salida al nivel máximo, y gire el tornillo de ajuste del acimut hasta que el patrón de forma de onda de lissajous del osciloscopio se acerque a una línea recta de 45°.	
II. Ajuste de la tarjeta de circuito impreso **Nota : Realice en primer lugar el ajuste de velocidad doble.**							
<1>	VELOCIDAD DE LA CINTA (ALTA VELOCIDAD)	TCC-110 MTT-111 SCC-1727 3kHz	–	* (1) Modo de prueba (2) Mode de prueba de sincronización	VR1 (A) VR2 (B)	Ajuste la velocidad de la cinta de forma que la señal de 6kHz se produzca en el centro de la cinta.	
<2>	VELOCIDAD DE LA CINTA (NORMAL)				VR3 (A) VR4 (B)	Ajuste la velocidad de la cinta de forma que la señal de 3kHz se produzca en el centro de la cinta.	

***1. Modo de prueba**

Cortocircuite PT ⑩ –▷|– ⑦ y conecte la alimentación. Tecla FWD : Velocidad normal, Tecla FF : Alta velocidad.

2. Modo de prueba de sincronización (KSJ-0816)

1) Introduzca E040H→Estado de prueba de sincronización
2) Deck-A : Reproducción progresiva E010H
3) Deck-A : Velocidad alta E018H VR1 6kHz
4) Deck-A : Normal E017H VR3 3kHz
5) Deck-A : Parada E014H
6) Deck-B : Normal E020H
7) Deck-B : Velocidad alta E028H VR2 6kHz
8) Deck-B : Normal E027H VR4 3kHz
9) Deck-B : Parada E024H
10) Desactivación del modo de prueba de sincronización del deck E041H

ADJUSTMENT

PB LEVEL, REC LEVEL ADJUSTMENT

1 In the case of automatic adjustment (Self adjustment)

● Lit (ON) ○ FLICKERING × OFF

	STEPS OF PROCEDURE	LED INDICATION STATE	CCRS-HIGH	CCRS-NOR	AUTO-BIAS	X-FADE	DUBB-HIGH	DUBB-NOR	CRLS	=	●
1	Turn the Power OFF										
2	Enter TCC—130 in DECK A Enter SCC—2280 in DECK B										
3	After turning the power ON, enter E 050 H or short circuit TP [10]-▷|-[7], and then turn the power ON. (The operation starts automatically.)										
4	DECK A playback level adjustment.	(Adjustment under way)	●	●	○	○	×	×	×	×	×
		(Finished)	●	●	○	●	×	×	×	×	×
5	DECK B playback level adjustment.	(Adjustment under way)	●	●	○	●	○	×	×	×	×
		(Finished)	●	●	○	●	●	×	×	×	×
6	Recording level adjustment.	(Recording under way)	●	●	○	●	●	○	×	×	●
		(Adjustment under way)	●	●	○	●	●	○	×	×	×
		(Finished)	●	●	○	●	●	●	×	×	×
7	Recording bias adjustment.	(Recording under way)	●	●	○	●	●	●	○	×	●
		(Adjustment under way)	●	●	○	●	●	●	○	×	×
		(Finished)	●	●	●	●	●	●	●	×	×
8	The adjustment is finished when the 7 light emitting diodes (LED) of CCRS—HIGH←→CRLS are lit. (E080H is outputted at this time F090H is outputted when there is error.) The operation mode returns to normal when the power is turned OFF or when the PAUSE KEY is pushed.										

List of codes of the synchro test mode

- Deck synchro test code (E 0××H)
- Synchro test ON

  Synchro test ON code (40 H)
- Synchro test OFF

  Synchro test OFF code (41 H)

DOLBY OFF (37 H) ·····DOLBY is turned OFF.

DOLBY B ON (38 H)·····DOLBY B is turned ON.

DOLBY C ON (39 H)·····DOLBY C is turned ON.

DIRECTION ⇄ (3 AH)·····The operation is switched to the one-way mode.

DIRECTION ⇉ (3 BH)·····The operation is switched to the reverse mode.

DIRECTION ↻ (3 CH)·····The operation is switched to the endless mode.

Normal operation is carried out in the following modes.

	A	B
FWD PLAY	10 H	20 H
PVS PLAY	11 H	21 H
FF	12 H	22 H
RWD	13 H	23 H
STOP	14 H	24 H
REC		25 H
PAUSE		26 H
FWD REC		2 CH
RVS REC		2 DH

CCRS	30 H
H.CCRS	31 H
X—FADE	32 H
A.BIAS	33 H
CRLS	34 H
NOR.DUB	35 H
HI.DUB	36 H

ADJUSTMENT

2 Manual adjustment

● Lit (ON) ○ FLICKERING × OFF

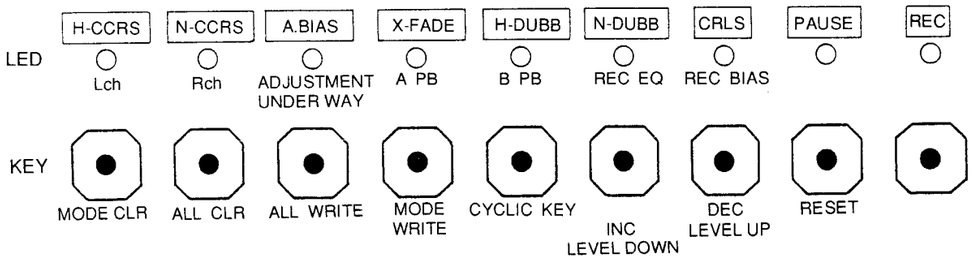
	STEPS OF PROCEDURE	LED INDICATION STATE								
		CCRS-HIGH	CCRS-NOR	AUTO-BIAS	X-FADE	DUBB-HIGH	DUBB-NOR	CRLS	■■	●
1	Turn the Power OFF									
2	After turning the power ON, enter E051H or short circuit TP [2]-▷|-[7], and then turn the power ON.	●	×	○	●	×	×	×	×	×
3	Enter TCC−130 in DECK A and PLAY.									
4	DECK A Lch LEVEL adjustment. Same as in the case of P.B DUBB NOR (DOWN) / CRLS (UP) Adjust the output level to −1 dBs by means of the UP/DOWN KEY. TCC-130 200 nwb/m - −1 dBs (690 mV) 250 nwb/m - 0 dBs 160 nwb/m - −4 dBs ※When using 160 nwb/m or 250 nwb/m tape, adjust to −4 dB and 0 dB respectively.									
5	Push the [DUBB HIGH] KEY. Adjust the DECK A Rch LEVEL.	×	●	○	●	×	×	×	×	×
6	Push the [DUBB HIGH] KEY. Enter TCC−130 in DECK B, and PLAY. Adjust the B Lch LEVEL.	●	×	○	×	●	×	×	×	×
7	Push the [DUBB HIGH] KEY. Adjust the B, Rch LEVEL.	×	●	○	×	●	×	×	×	×
	As the PLAY/REC select IC is on the PLAY side even during recording in the manual adjustment mode, the playback or recording monitor is output from the deck. Due to this, connect TP [19] and [20] of the AG output and input the recording. −REC Adjustment−									
8	Push the [DUBB HIGH] KEY (Lch REC LEVEL). Load the tape to be recorded in the DECK B (TDK AC-223). Connect AG (1 kHz) with TP [19]. Push the REC KEY to start the recording, and adjust AG for the output to become −10 dBs. Play the recorded tape back, and make sure that the 1 kHz output is −10 dBs. DUBB NOR (DOWN) / CRLS (UP) Adjust the output to −10 dBs by means of the UP/DOWN KEY. (Each stop corresponds to a change of approximately 0.2 dBs)	●	×	○	×	×	●	×	×	×
		●	×	○	×	×	●	×	×	●
		●	×	○	×	×	●	×	×	×
9	Push the [DUBB HIGH] KEY Rch REC LEVEL adjustment. Connect AG (1 kHz) with TP [20]. Push the REC KEY, and adjust AG to obtain −10 dBs. Play the recorded tape back, verify whether the output is −10 dBs , and make the required adjustments.	×	●	○	×	×	●	×	×	×
		×	●	○	×	×	●	×	×	●
		×	●	○	×	×	●	×	×	×

ADJUSTMENT

● Lit (ON) ○ FLICKERING × OFF

	STEPS OF PROCEDURE	LED INDICATION STATE
10	Push the DUBB HIGH KEY. Lch BIAS adjustment. Connect AG (−10 dBs) with TP 19 and record 1 kHz/10 kHz alternately. Make the required adjustments with the UP/DOWN KEY for the playback outputs of 1 kHz/10 kHz to become the same.	● × ○ × × × ● × × ● × ○ × × × ● × ●
11	Push the DUBB HIGH KEY. Rch recording BIAS adjustment. Connect AG with TP 20, record 1 kHz/10 kHz alternately, and carry out the required adjustment with the UP/DOWN KEY for the playback outputs to become the same.	× ● ○ × × × ● × × × ● ○ × × × ● × ●
12	Push the AUTO BIAS KEY which is flickering, and send data to the EEPROM.	
13	Reset the adjustment mode by turning the power OFF or by means of the PAUSE key.	

LAYOUT OF THE KEYS AND LED



PRECAUTIONS FOR ADJUSTMENT

During manual adjustment mode

1. The manual adjustment mode is necessarily started form the adjustment of the A Lch PB.

2. All backup check data are reset.
   When resetting the manual adjustment mode, make sure of pushing the ALL WRITE key in the first place before resetting.
   If the Manual adjustment mode is reset before pushing the ALL WRITE key (before writing the backup check data), the operation starts form the initial state, by assuming that the backup has been destroyed, when the operation is started the next time from any mode other than adjustment.

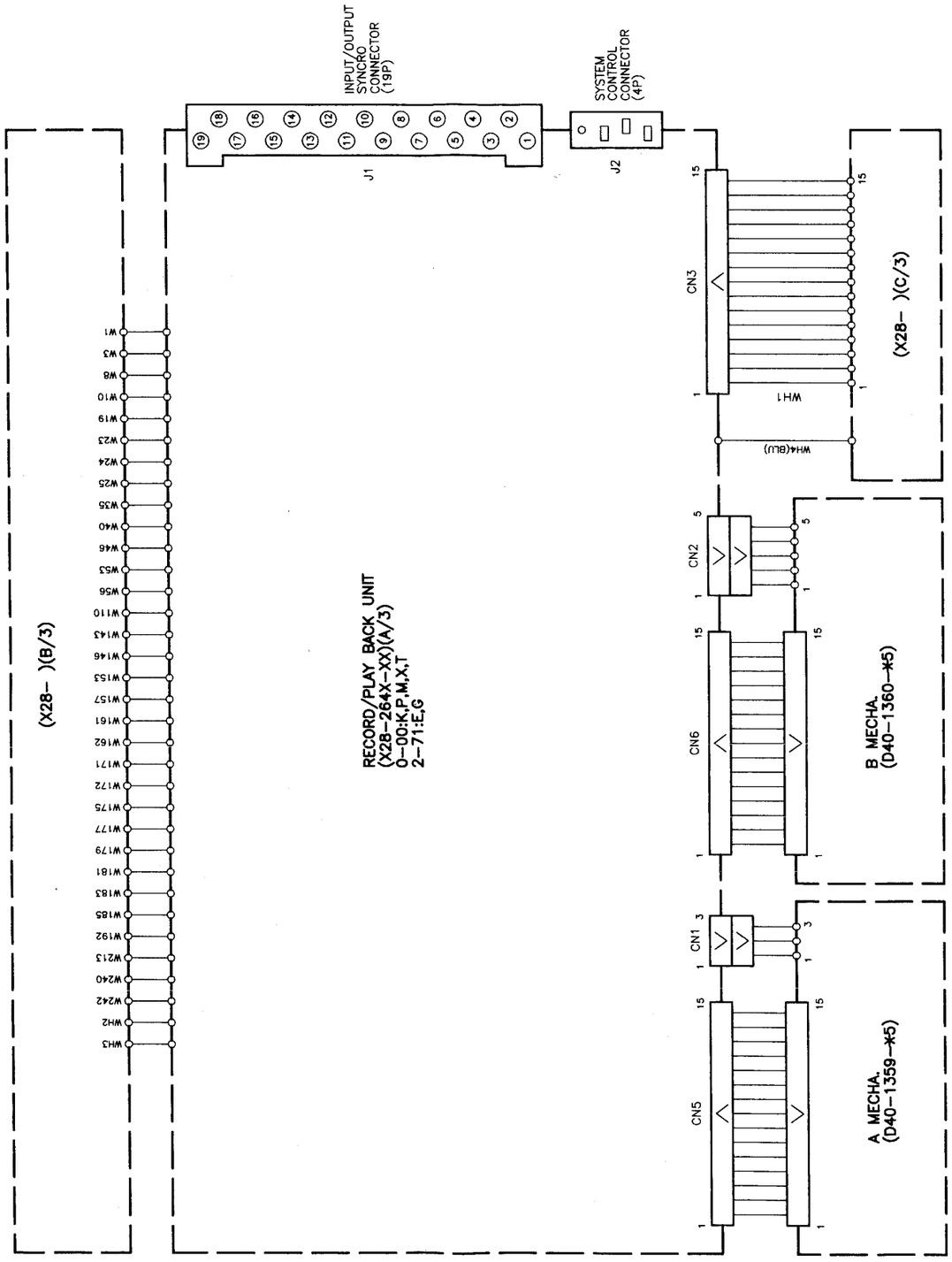
3. No key can be fetched during ALL WRITE or during WRITE by item. (Maximum about 500 ms).

4. Operations in the deck by means of the other keys can be carried out as usual.

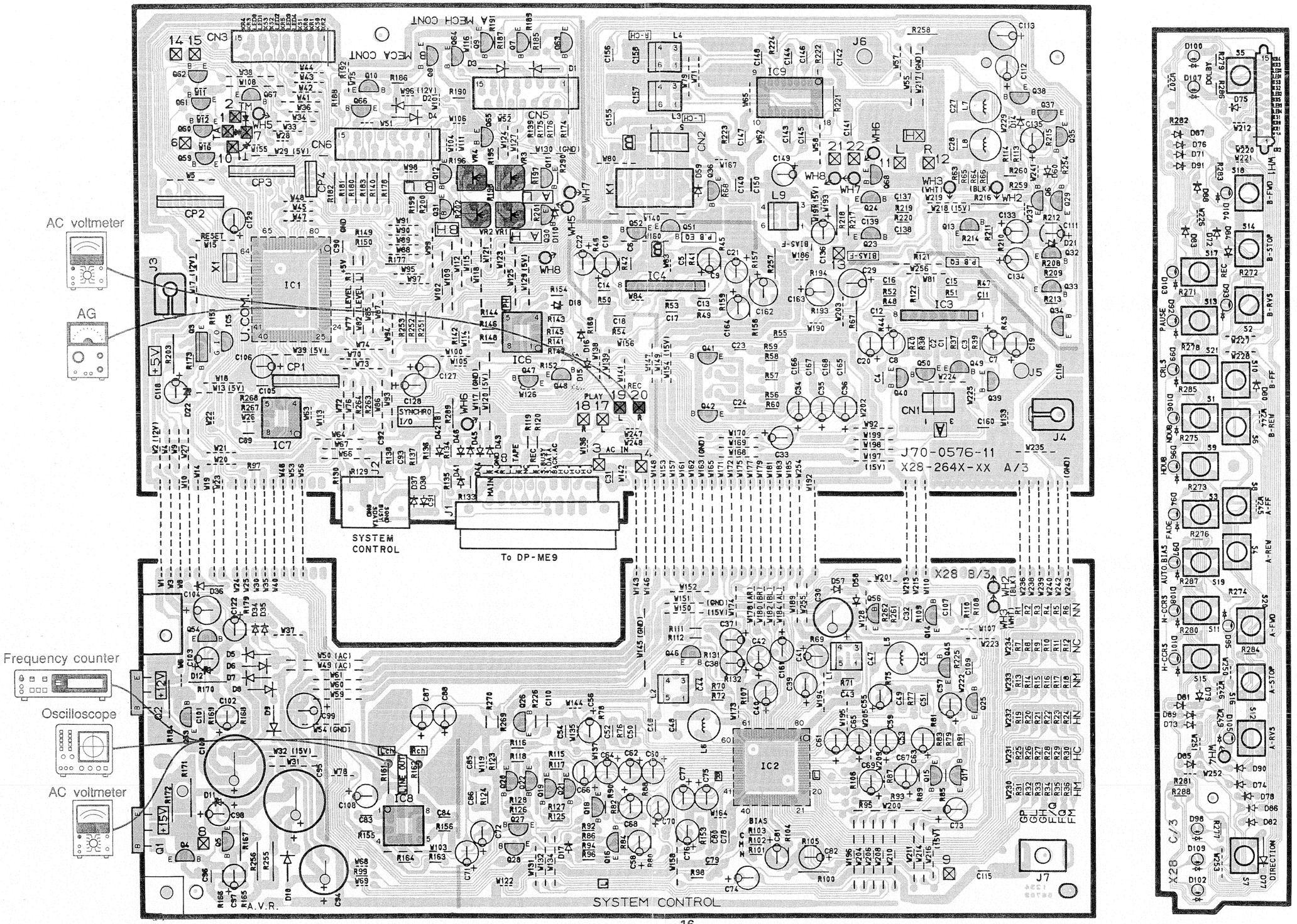
5. There is no output of synchronization code for ordinary operation. (Because the synchronization code is used to display the adjustment value).

6. Adjust the bias within the limits comprehended from 20 STEP to 50 STEP.
   In the manual adjustment mode the bias setting can be done with a variable value with in the limits comprehended from 0 STEP to 63 STEP.
   In the AUTO BIAS adjustment mode, however, all values of the bias under 20 STEP are rounded up to 20 STEP, and all values over 50 STEP rounded down to 50 STEP when the main unit bias is called, because a limiter is provided as apart of the operations related to AUTO BIAS.

WIRING DIAGRAM

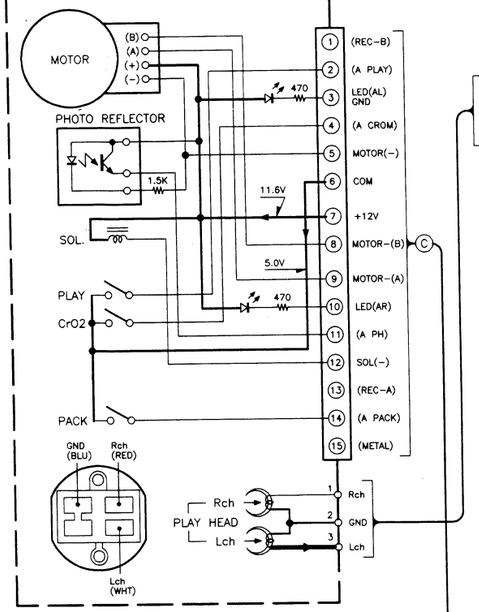


PC BOARD (COMPONENT SIDE VIEW)

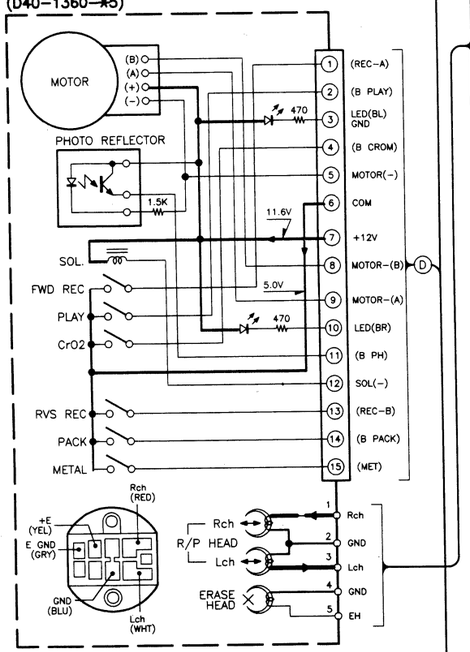


Refer to the schematic diagram for the values of resistors and capacitors.

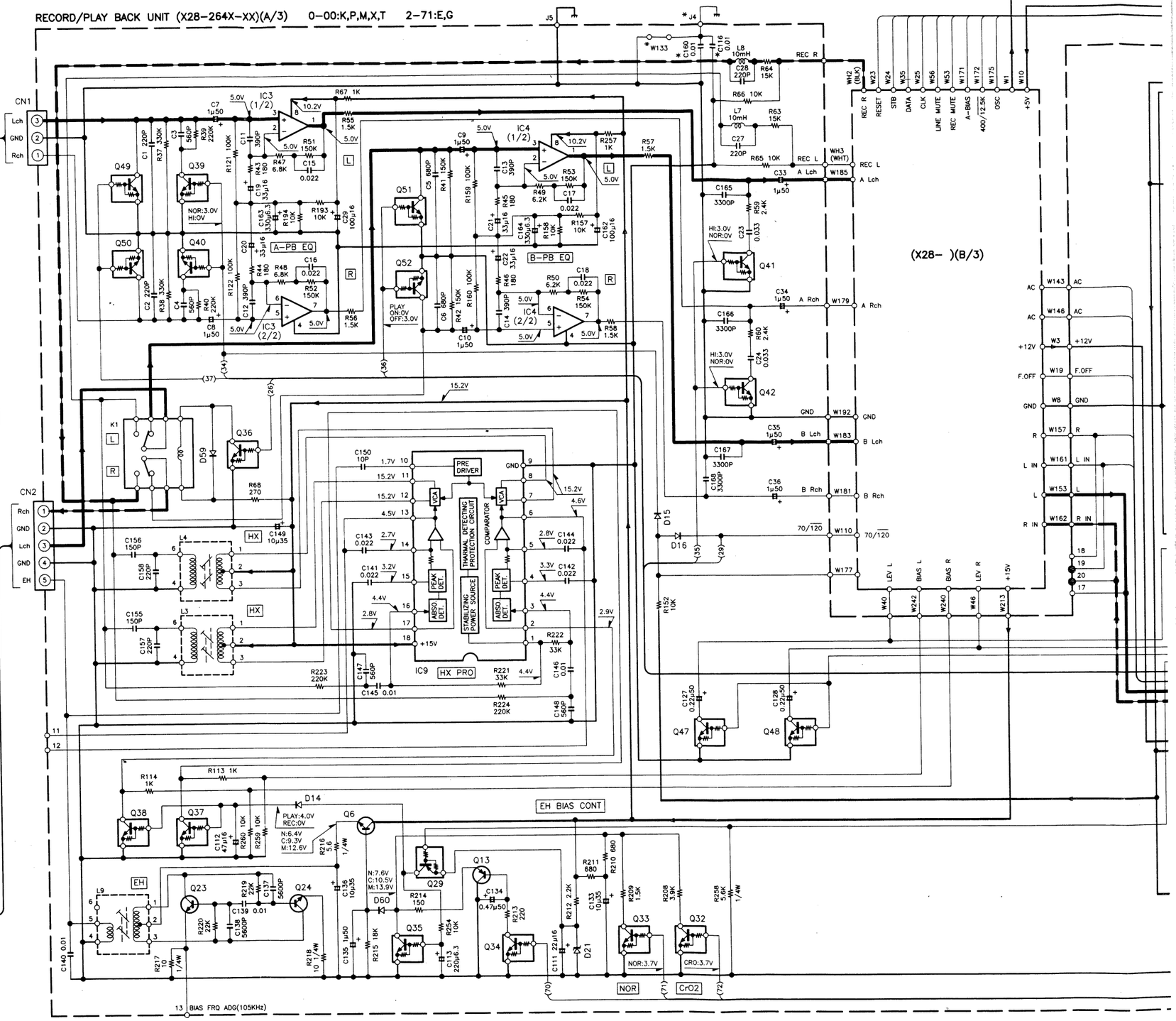
A MECHA.
(D40-1359-*5)



B MECHA.
(D40-1360-*5)



RECORD/PLAY BACK UNIT (X28-264X-XX)(A/3) 0-00:K,P,M,X,T 2-71:E,G

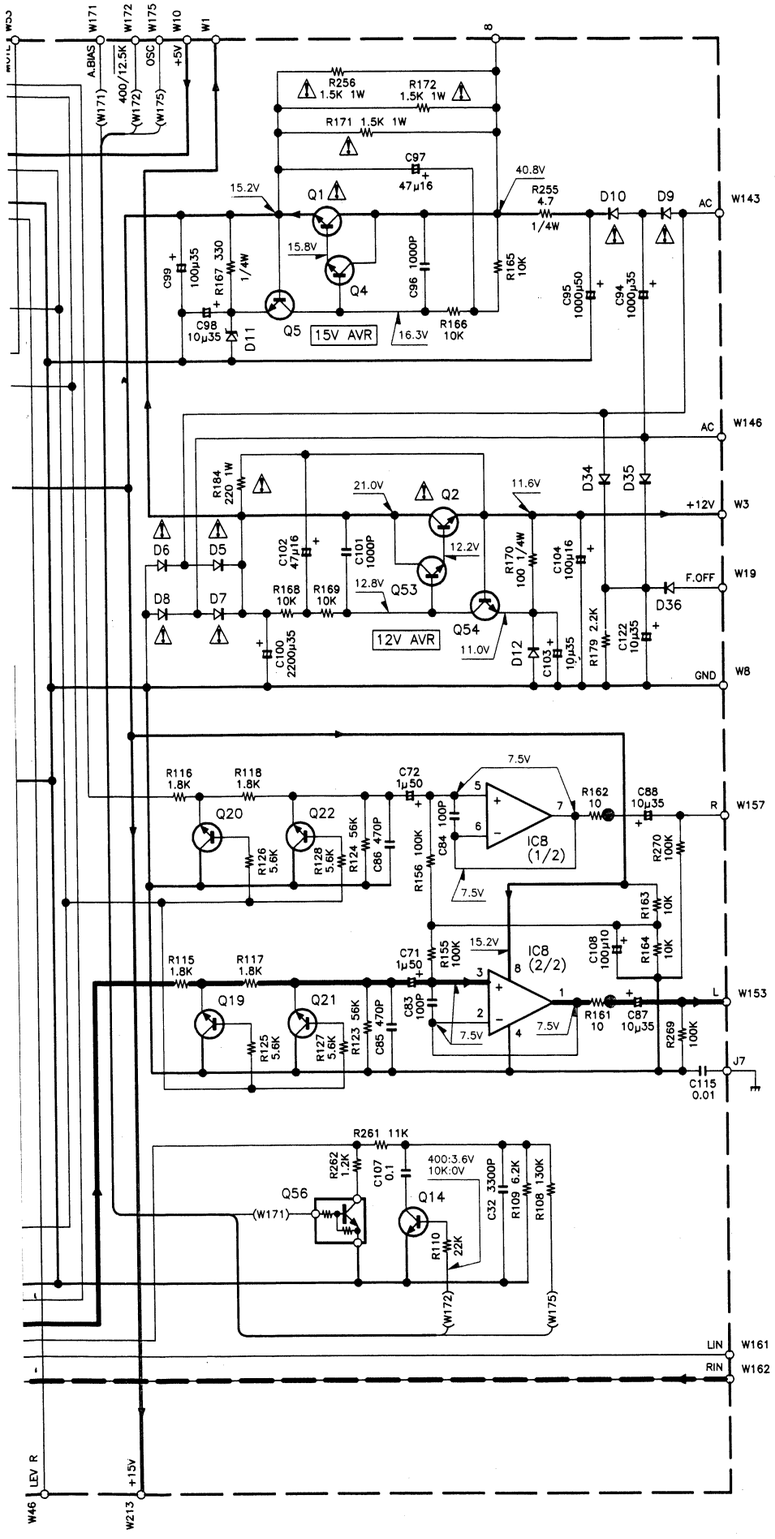


(X28-264X-XX)(B/3) 0-00:K,P,M,X,T 2-71:E,G

Q1,2	:2SD2012 or 2SD2374
Q4,5	:2SD863(E,F) or 2SC3940A(R,S)
Q14,17,18,53,54	:2SC3311A(Q,R) 2SC2458(Y,GR)
Q15,16,19~22	:2SD1302(S,T)
Q25,26,45,46,56	:UN4212 or DTC124ES
Q27,28	:UN4112 or DTA124ES
D5~10	:S5688B or 1SR139-100
D11	:RD15ES(B) or HZS15N(B)
D12	:RD11ES(B2) or HZS11N(B2)
D17,34~36,57,58	:1SS133 or HSS104
IC2	:HA12167FB
IC8	:NJM4565D

SIGNAL LINE
RECORDING LINE
GND LINE
+B LINE

X-E9(K)(2/2)



Q1,2 :2SD2012 or 2SD2374
Q4,5 :2SD863(E,F) or 2SC3940A(R,S)
Q14,17,18,53,54 :2SC3311A(Q,R) or 2SC2458(Y,GR)
Q15,16,19~22 :2SD1302(S,T)
Q25,26,45,46,56 :UN4212 or DTC124ES
Q27,28 :UN4112 or DTA124ES

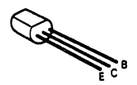
D5~10 :S5688B or 1SR139-100
D11 :RD15ES(B) or HZS15N(B)
D12 :RD11ES(B2) or HZS11N(B2)
D17,34~36,57,58 :1SS133 or HSS104

IC2 :HA12167FB
IC8 :NJM4565D

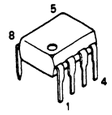
SIGNAL LINE
RECORDING LINE
GND LINE
+B LINE

X-E9(K)(2/2)

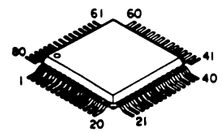
2SC3246
2SC3940A
2SD1302
2SD863



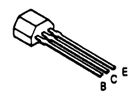
X24C01P



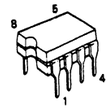
HA12167FB



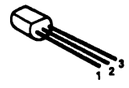
DTA124ES DTA143TS
DTC124ES UN4112
UN4116 2SA1048
2SC2458



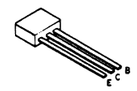
NJM4565D



S-80740AL

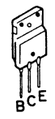


UN4212
UN4219
2SA1309A
2SC3311A

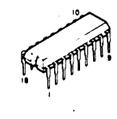


BA10393
NJM4580L-D

2SD2012
2SD2374



UPC1297CA

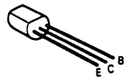


CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer. DOLBY and the double-D symbol are tradmarks of Dolby Laboratories Licensing Corporation. Noise reduction circuit made under license from Dolby Laboratories Licensing Corporation.

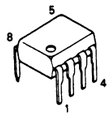
- DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.

X-E9
KENWOOD

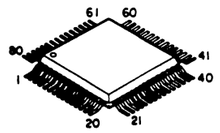
2SC3246
2SC3940A
2SD1302
2SD863



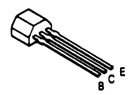
X24C01P



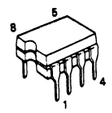
HA12167FB



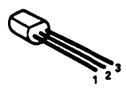
DTA124ES DTA143TS
DTC124ES UN4112
UN4116 2SA1048
2SC2458



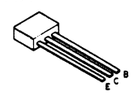
NJM4565D



S-80740AL

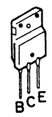


UN4212
UN4219
2SA1309A
2SC3311A

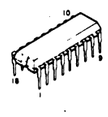


BA10393
NJM4580L-D

2SD2012
2SD2374



UPC1297CA



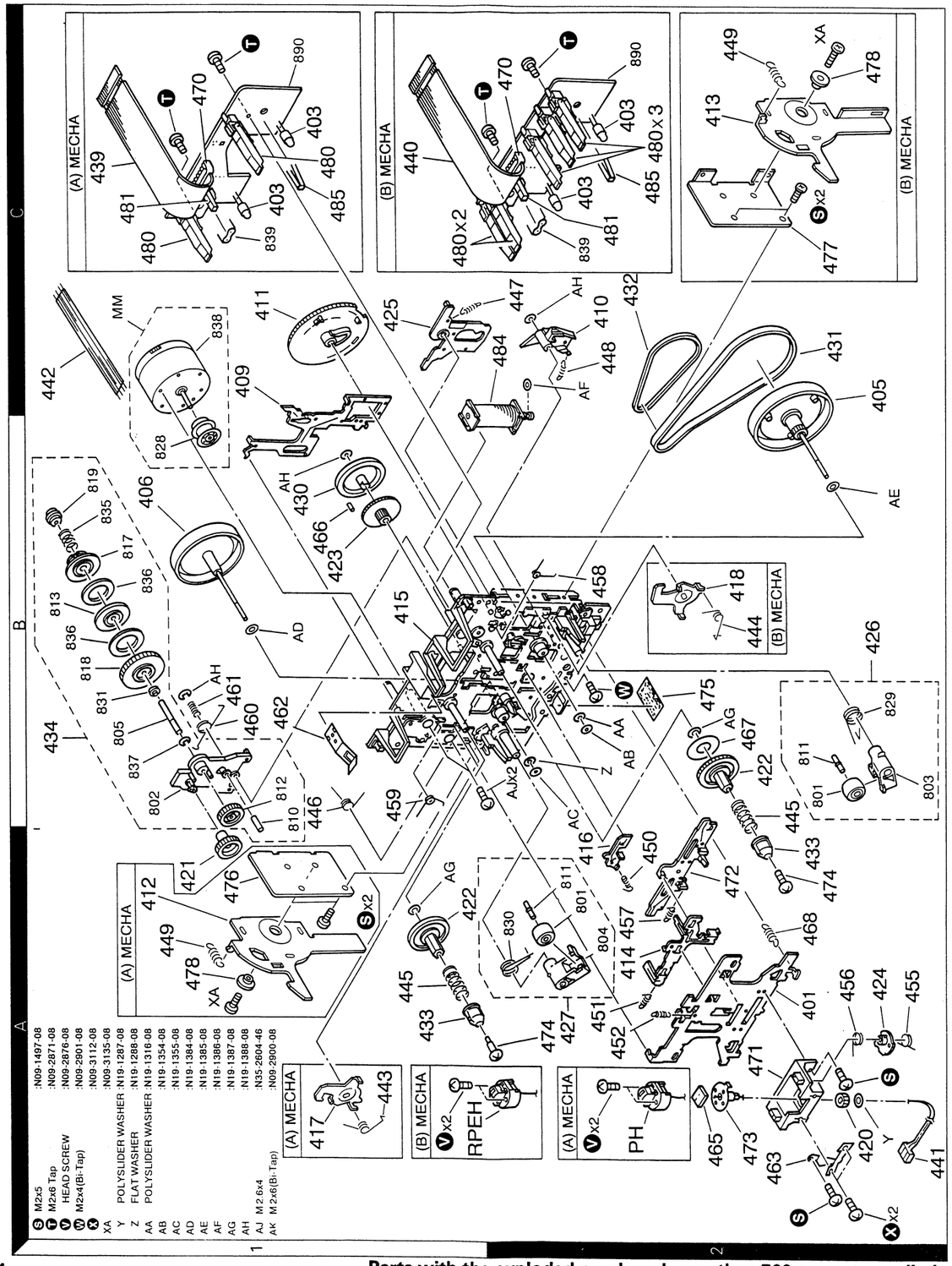
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.DOLBY and the double-D symbol are tradmarks of Dolby Laboratories Licensing Corporation. Noise reduction circuit made under license from Dolby Laboratories Licensing Corporation.

- DC voltages are as measured with a high impedance voltmeter with a cassette loaded at playback mode. Values may vary slightly due to variations between individual instruments or/and units. Bias circuit DC voltages are as measured while in the record mode.

X-E9
KENWOOD

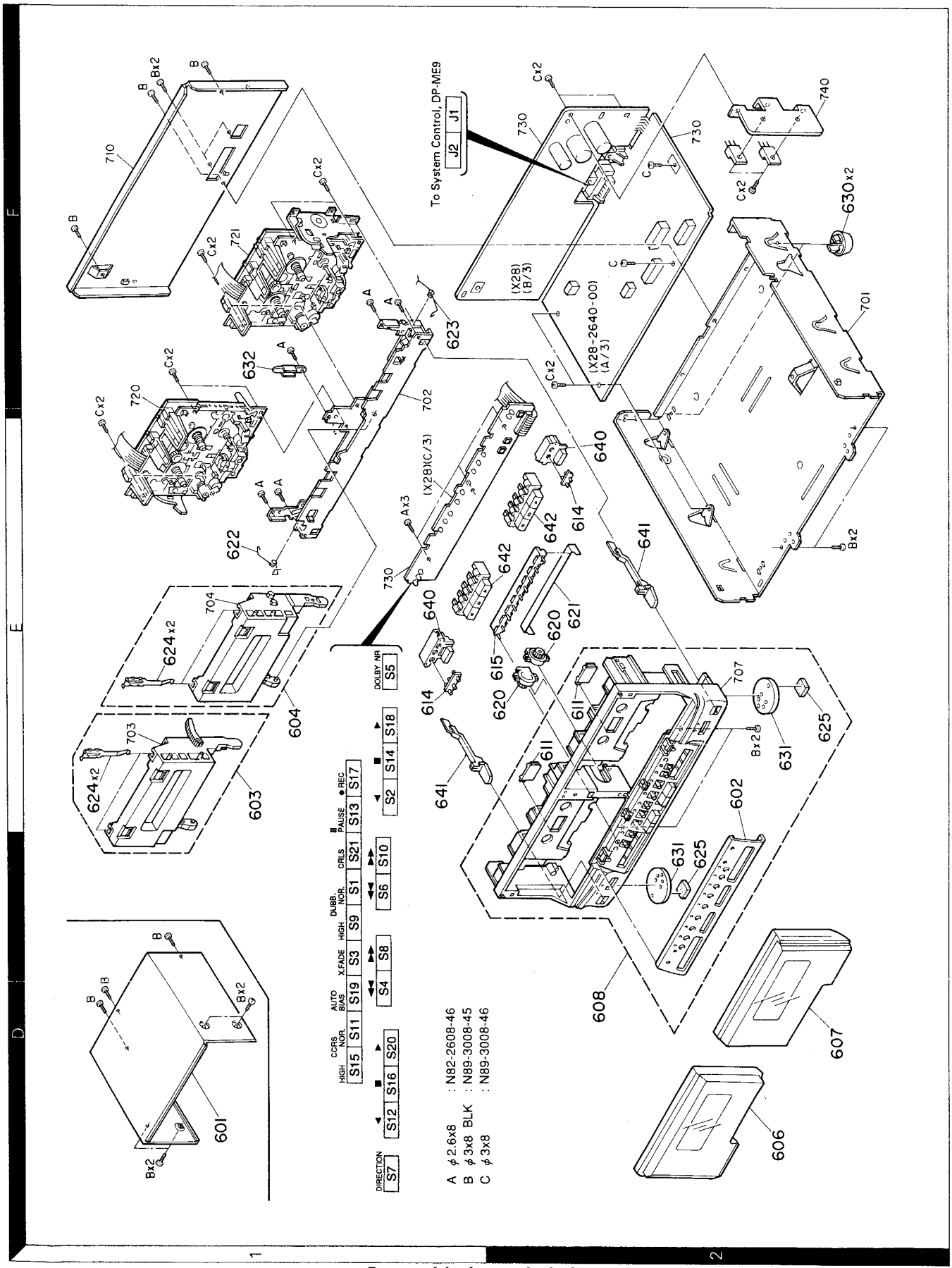
X-E9

EXPLODED VEW : MECHANISM



Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW : UNIT


To System Control, DP-ME9
J2 J1
(X28) (B/3)
(X28-2640-00) (A/3)
(X28)(C/3)
DIRECTION S7
HIGH S15 CCRS NOR. S11 AUTO BIAS S19 X-FADE S3 HIGH S9 DUBB NOR. S1 CRLS S21 PAUSE S13 ● REC S17
S12 S16 S20 S4 S8 S6 S10 S2 S14 S18
DOLBY NR S5
A φ2.6x8 : N82-2608-46
B φ3x8 BLK : N89-3008-45
C φ3x8 : N89-3008-46

Parts with the exploded numbers larger than 700 are not supplied.

× New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

❶

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
			X-E9			
601	1D		A01-2937-01	METALLIC CABINET		
602	2D	*	A21-1859-03	DRESSING PANEL		A
603	1E	*	A53-1490-03	CASSETTE HOLDER ASSY		B
604	1E	*	A53-1492-03	CASSETTE HOLDER ASSY		A
606	2D	*	A53-1494-03	CASSETTE LID ASSY		
607	2D	*	A53-1496-03	CASSETTE LID ASSY		B
608	2D	*	A60-0581-22	PANEL ASSY		
611	2E		B07-1720-04	ESCUTCHEON		
614	1E,2E	*	B19-1530-04	LIGHTING BOARD		
615	2E	*	B19-1531-14	LIGHTING BOARD		
-			B46-0310-03	WARRANTY CARD	TEG	
620	2E		D39-0316-05	DAMPER		
621	2E	*	F19-1049-04	BLIND PLATE		
622	1E	*	G01-3682-04	TORSION COIL SPRING		
623	1F	*	G01-3683-04	TORSION COIL SPRING		
624	1E		G02-0944-04	FLAT SPRING		
625	2D		G11-2052-14	CUSHION		
-			G16-0850-04	SHEET (BETWEEN PANEL-LTD)		
			H50-1083-04	ITEM CARTON CASE	K	
		*	H50-1084-04	ITEM CARTON CASE	TEG	
-		*	H10-5763-02	POLYSTYRENE FOAMED FIXTURE	KTEG	
-		*	H10-5764-02	POLYSTYRENE FOAMED FIXTURE	KTEG	
-		*	H10-5765-02	POLYSTYRENE FOAMED FIXTURE	PMX	
-		*	H10-5766-02	POLYSTYRENE FOAMED FIXTURE	PMX	
-			H20-0574-04	PROTECTION COVER	M	
-			H25-0681-04	PROTECTION BAG	KPXTEG	
630	2F		J02-0366-15	FOOT		
631	2D,2E		J02-1095-04	FOOT		
632	1F		J21-6125-04	MOUNTING HARDWARE		
640	1E,2E	*	K29-5929-03	KNOB(DIRECTON,DOLBY NR)		
641	1E,2E	*	K29-5932-04	KNOB(EJECT)		
642	1E,2E	*	K29-6036-03	KNOB ASSY(FWD,STOP,RVS)		
			RECORD/PLAYBACK UNIT (X28-2640-00 : K·P·M·X·T, X28-2642-71 : E·G)			
D92 -109			B30-2430-05	LED		
C1 ,2			CC45FSL1H221J	CERAMIC 220PF J		
C3 ,4			CK45FB1H561K	CERAMIC 560PF K		
C5 ,6			CK45FB1H681K	CERAMIC 680PF K		
C7 -10			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C11 -14			CK45FB1H391K	CERAMIC 390PF K		
C15 -18			CQ93FMG1H223J	MYLAR 0.022UF J		
C19 -22			CE04KW1C330M	ELECTRO 33UF 16WV		
C23 ,24		*	CQ93FMG1H333J	MYLAR 0.033UF J		
C27 ,28			CC45FSL1H221J	CERAMIC 220PF J		
C29			CE04KW1C101M	ELECTRO 100UF 16WV		
C30			CE04KW1V331M	ELECTRO 330UF 35WV		
C31			CK45FF1H103Z	CERAMIC 0.010UF Z		
C32			CQ93FMG1H332J	MYLAR 3300PF J		
C33 -36			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C37 ,38			CE04KW1V100M	ELECTRO 10UF 35WV		

A : DECK A, B : DECK B

L : Scandinavia K : USA P : Canada R : Mexico
Y : PX (Far East, Hawaii) T : England E : Europe G : Germany
Y : AAFES (Europe) X : Australia M : Other Areas

⚠ indicates safety critical components.

× New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

❷

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C39 -42			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C43 ,44			CK45FB1H682K	CERAMIC 6800PF K		
C45 ,46			CK45FF1H103Z	CERAMIC 0.010UF Z		
C47 ,48			CC45FSL1H221J	CERAMIC 220PF J		
C49 -54		*	CQ93FMG1H222J	MYLAR 2200PF J		
C55 ,56			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C57 ,58			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C59 -62			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C63 ,64			CE04KW1V100M	ELECTRO 10UF 35WV		
C65 ,66			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C67 ,68			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C69 -72			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C73 ,74			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C75 -77			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C78 ,79			CC45FSL1H180J	CERAMIC 18PF J		
C80			CC45FSL1H560J	CERAMIC 56PF J		
C81 ,82			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C83 ,84			CC45FSL1H101J	CERAMIC 100PF J		
C85 ,86			CK45FB1H471K	CERAMIC 470PF K		
C87 ,88			CE04KW1V100M	ELECTRO 10UF 35WV		
C89			CK45FF1H223Z	CERAMIC 0.022UF Z		
C90 ,91			CK45FF1H103Z	CERAMIC 0.010UF Z		
C92 ,93			CC45FSL1H221J	CERAMIC 220PF J		
C94			CE04KW1V102M	ELECTRO 1000UF 35WV		
C95			CE04KW1H102M	ELECTRO 1000UF 50WV		
C96			CK45FB1H102K	CERAMIC 1000PF K		
C97			CE04KW1C470M	ELECTRO 47UF 16WV		
C98			CE04KW1V100M	ELECTRO 10UF 35WV		
C99			CE04KW1V101M	ELECTRO 100UF 35WV		
C100			CE04KW1V222M	ELECTRO 2200UF 35WV		
C101			CK45FB1H102K	CERAMIC 1000PF K		
C102			CE04KW1C470M	ELECTRO 47UF 16WV		
C103			CE04KW1V100M	ELECTRO 10UF 35WV		
C104			CE04KW1C101M	ELECTRO 100UF 16WV		
C105			CK45FF1H103Z	CERAMIC 0.010UF Z		
C106			CE04KW1A101M	ELECTRO 100UF 10WV		
C107			CQ93FMG1H104J	MYLAR 0.10UF J		
C108			CE04KW1A101M	ELECTRO 100UF 10WV		
C109,110			CK45FF1H223Z	CERAMIC 0.022UF Z		
C111			CE04KW1C220M	ELECTRO 22UF 16WV		
C112			CE04KW1C470M	ELECTRO 47UF 16WV		
C113			CE04KW0J221M	ELECTRO 220UF 6.3WV		
C115			CK45FF1H103Z	CERAMIC 0.010UF Z	KPMXT	
C115,116			CK45FF1H103Z	CERAMIC 0.010UF Z	EG	
C118			CE04KW1V100M	ELECTRO 10UF 35WV		
C122			CE04KW1V100M	ELECTRO 10UF 35WV		
C127,128			CE04KW1HR22M	ELECTRO 0.22UF 50WV		
C129			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C133			CE04KW1V100M	ELECTRO 10UF 35WV		
C134			CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C135			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C136			CE04KW1V100M	ELECTRO 10UF 35WV		
C137,138			CQ93FMG1H562J	MYLAR 5600PF J		
C139			CK45FF1H103Z	CERAMIC 0.010UF Z		
C140			CQ93HP2A103J	MYLAR 0.010UF J		

L : Scandinavia K : USA P : Canada R : Mexico
Y : PX (Far East, Hawaii) T : England E : Europe G : Germany
Y : AAFES (Europe) X : Australia M : Other Areas

⚠ indicates safety critical components.

X-E9

PARTS LIST

× New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

❸

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C141-144		*	CQ93FMG1H223J	MYLAR 0.022UF J		
C145,146		*	CQ93FMG1H103J	MYLAR 0.010UF J		
C147,148			CC45FSL1H561J	CERAMIC 560PF J		
C149			CE04KW1V100M	ELECTRO 10UF 35WV		
C150			CC45FSL2H100D	CERAMIC 10PF D		
C155,156			C91-1434-05	FILM 150PF J		
C157,158			C91-1436-05	FILM 220PF J		
C160			CK45FF1H103Z	CERAMIC 0.010UF Z	EG	
C161			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C162			CE04KW1C101M	ELECTRO 100UF 16WV		
C163,164			CE04KW0J331M	ELECTRO 330UF 6.3WV		
C165-168		*	CQ93FMG1H332J	MYLAR 3300PF J		
J1			E58-0006-05	RECTANGULAR RECEPTACLE		
J2			E08-0311-05	RECTANGULAR RECEPTACLE		
J5			J11-0098-05	WIRE CLAMPER		
J7			J21-5845-04	MOUNTING HARDWARE		
L1 ,2			L79-1210-05	LC FILTER		
L3 ,4			L32-0562-05	BIAS OSCILATING COIL		
L5 -8			L40-1035-29	SMALL FIXED INDUCTOR(10MH, J)		
L9		*	L32-0570-05	BIAS OSCILATING COIL		
X1			L78-0267-05	RESONATOR (4.194MHZ)		
CP1 -3			R90-0805-05	MULTI-COMP 10KX8 J 1/4W		
CP4			R90-0809-05	MULTI-COMP 10KX4 J 1/6W		
R167			RD14NB2E331J	RD 330 J 1/4W		
R170			RD14NB2E101J	RD 100 J 1/4W		
⚠ R171,172			RS14DB3A152J	FL-PROOF RS 1.5K J 1W		
⚠ R184			RS14DB3A221J	FL-PROOF RS 220 J 1W		
R203			RD14NB2E220J	RD 22 J 1/4W		
R216			RD14NB2E5R6J	RD 5.6 J 1/4W		
R255			RD14NB2E4R7J	RD 4.7 J 1/4W		
⚠ R256			RS14DB3A152J	FL-PROOF RS 1.5K J 1W		
VR1 ,2			R12-3685-05	TRIMMING POT.(10K B)		
VR3 ,4			R12-3686-05	TRIMMING POT.(22K B)		
K1			S51-2089-05	MAGNETIC RELAY		
K1			S76-0018-05	MAGNETIC RELAY		
S1 -21			S40-1064-05	PUSH SWITCH		
⚠ D1 -10			S5688B	DIODE		
⚠ D1 -10			1SR139-100	DIODE		
D11			HZS15N(B)	ZENER DIODE		
D11			RD15ES(B)	ZENER DIODE		
D12			HZS11N(B2)	ZENER DIODE		
D12			RD11ES(B2)	ZENER DIODE		
D14 -17			HSS104	DIODE		
D14 -17			1SS133	DIODE		
D18			HZS2.7N(B2)	ZENER DIODE		
D18			RD2.7ES(B2)	ZENER DIODE		
D21			HZS4.7N(B)	ZENER DIODE		
D21			RD4.7ES(B)	ZENER DIODE		
D22			HZS5.6N(B2)	ZENER DIODE		
D22			RD5.6ES(B2)	ZENER DIODE		
D34 -38			HSS104	DIODE		
D34 -38			1SS133	DIODE		

L: Scandinavia **K**: USA **P**: Canada **R**: Mexico
Y: PX (Far East, Hawaii) **T**: England **E**: Europe **G**: Germany
Y: AAFES (Europe) **X**: Australia **M**: Other Areas

⚠ indicates safety critical components.

× New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

❹

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
D41 -46			HSS104	DIODE		
D41 -46			1SS133	DIODE		
D57 -60			HSS104	DIODE		
D57 -60			1SS133	DIODE		
D71 -91			HSS104	DIODE		
D71 -91			1SS133	DIODE		
D110			HSS104	DIODE		
D110			1SS133	DIODE		
IC1			UPD75517GF-295	MI-COM IC		
IC2			HA12167FB	IC(DOLBY B/C, REC EQ)		
IC3 ,4			NJM4580L-D	IC(OP AMP X2)		
IC5			S-80740AL	IC(VOLTAGE DETECTOR)		
IC6			BA10393	IC(DUAL COMPALATOR)		
IC7			X24C01P	IC(128X8BIT SERIAL EEPROM)		
IC8			NJM4565D	IC(OP AMP X2)		
IC9			UPC1297CA	IC(DOL HX PRO SYSTEM)		
⚠ Q1 -3			2SD2012	TRANSISTOR		
⚠ Q1 -3			2SD2374	TRANSISTOR		
Q4 -8			2SC3940A(R,S)	TRANSISTOR		
Q4 -8			2SD863(E,F)	TRANSISTOR		
Q9 ,10			2SC3246	TRANSISTOR		
Q11 -13			2SA1048(Y,GR)	TRANSISTOR		
Q11 -13			2SA1309A(Q,R)	TRANSISTOR		
Q14			2SC2458(Y,GR)	TRANSISTOR		
Q14			2SC3311A(Q,R)	TRANSISTOR		
Q15 ,16			2SD1302(S,T)	TRANSISTOR		
Q17 ,18			2SC2458(Y,GR)	TRANSISTOR		
Q17 ,18			2SC3311A(Q,R)	TRANSISTOR		
Q19 -22			2SD1302(S,T)	TRANSISTOR		
Q23 ,24			2SC2458(Y,GR)	TRANSISTOR		
Q23 ,24			2SC3311A(Q,R)	TRANSISTOR		
Q25 ,26			DTC124ES	DIGITAL TRANSISTOR		
Q25 ,26			UN4212	TRANSISTOR		
Q27 -29			DTA124ES	DIGITAL TRANSISTOR		
Q27 -29			UN4112	TRANSISTOR		
Q30 -34			DTC124ES	DIGITAL TRANSISTOR		
Q30 -34			UN4212	TRANSISTOR		
Q35			DTC113ZS	DIGITAL TRANSISTOR		
Q35			UN4219	TRANSISTOR		
Q36 -42			DTC124ES	DIGITAL TRANSISTOR		
Q36 -42			UN4212	TRANSISTOR		
Q45 -52			DTC124ES	DIGITAL TRANSISTOR		
Q45 -52			UN4212	TRANSISTOR		
Q53 ,54			2SC2458(Y,GR)	TRANSISTOR		
Q53 ,54			2SC3311A(Q,R)	TRANSISTOR		
Q56			DTC124ES	DIGITAL TRANSISTOR		
Q56			UN4212	TRANSISTOR		
Q59 -62			DTA113ZS	DIGITAL TRANSISTOR		
Q59 -62			UN4119	TRANSISTOR		
Q63 -66			DTC124ES	DIGITAL TRANSISTOR		
Q63 -66			UN4212	TRANSISTOR		
Q67			DTA124ES	DIGITAL TRANSISTOR		
Q67			UN4112	TRANSISTOR		
Q68			DTA143TS	DIGITAL TRANSISTOR		
Q68			UN4116	TRANSISTOR		

L: Scandinavia **K**: USA **P**: Canada **R**: Mexico
Y: PX (Far East, Hawaii) **T**: England **E**: Europe **G**: Germany
Y: AAFES (Europe) **X**: Australia **M**: Other Areas

⚠ indicates safety critical components.

× New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

❺

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
			MECHANISM ASS'Y (D40-1359-05 : A DECK, D40-1360-05 : B DECK)			
401	2A	*	A10-3178-08	HEAD CHASSIS		
403	1C,2C	*	B30-2409-08	LED SEL2415E		
405	2C	*	D01-0175-08	FLYWHEEL (R) ASSY		
406	1B	*	D01-0176-08	FLYWHEEL (L) ASSY		
407	1A	*	D10-3468-08	INTER LOCK ARM (L)(A MECHA)		
408	2B	*	D10-3469-08	INTER LOCK ARM (R)(B MECHA)		
409	1C	*	D10-3470-08	SHIFT LEVER		
410	2C	*	D10-3471-08	HEAD CHANGE ARM		
411	1C	*	D10-3472-08	CAM GEAR		
412	1A	*	D10-3500-08	EJECT LEVER (L) (A MECHA)		
413	2C	*	D10-3501-08	EJECT LEVER (R) (B MECHA)		
414	2A	*	D10-3478-08	SELET LEVER		
415	1B	*	D10-3479-08	CHASSIS OS ASSY		
416	2A	*	D10-3480-08	C/R LEVER		
417	1A	*	D10-3502-08	ARM (LEFT) (INTER LOCK)		
418	2B	*	D10-3503-08	ARM (RIGHT) (INTER LOCK)		
420	2A	*	D13-0981-08	ROTATION GEAR		
421	1A	*	D13-1616-08	REW GEAR		
422	1A,2B	*	D13-1617-08	REEL GEAR		
423	1B	*	D13-1618-08	IDLER GEAR		
424	2A	*	D13-1621-08	RETURN GEAR		
425	1C	*	D13-1622-08	TRIGGER ARM		
426	2B	*	D14-0367-08	PINCH ARM (R) ASSY		
427	2A	*	D14-0368-08	PINCH ARM (L) ASSY		
430	1B	*	D15-0369-08	IDLER PULLEY		
431	2C	*	D16-0375-08	DRIVE BELT		
432	2C	*	D16-0376-08	CLUTCH BELT		
433	1A,2A		D19-0270-18	REEL CAP (A)		
434	1B	*	D19-0287-08	CLUTCH ARM ASSY		
439	1C	*	E35-0358-08	15P FLAT RIBBON WIRE (A MECHA)		
440	1C		E35-0934-08	15P FLAT RIBBON WIRE (B MECHA)		
441	2A	*	E35-1006-08	5P HEAD WIRE ASSY (B MECHA)		
441	2A	*	E35-1007-08	3P HEAD WIRE ASSY (A MECHA)		
442	1C	*	E35-0986-08	MOTOR WIRE		
443	1A	*	G01-3706-08	SPRING (L) (A MECHA)		
444	2B	*	G01-3707-08	SPRING (R) (B MECHA)		
445	1A,2B	*	G01-3709-08	B.T SPRING		
446	1B	*	G01-3710-08	SHIFT LEVER SP		
447	1C	*	G01-3711-08	TRIGGER ARM SP		
448	2C	*	G01-3712-08	HEAD CHANGE ARM SP		
449	1A,2C	*	G01-3708-08	EJECT SP		
450	2A	*	G01-3714-08	C/R LEVER SP		
451	2A	*	G01-3715-08	SELECT SP		
452	2A	*	G01-3716-08	SHIFT SP		
455	2A	*	G01-3718-08	RETURN SPR		
456	2A	*	G01-3719-08	FWD SPR		
457	2A	*	G01-3720-08	HEAD RETURN PLATE SP		
458	2B	*	G01-3721-08	BRAKE SP (R)		
459	1B	*	G01-3722-08	BRAKE SP (L)		

L : Scandinavia K : USA P : Canada R : Mexico
Y : PX (Far East, Hawaii) T : England E : Europe G : Germany
Y : AAFES (Europe) X : Australia M : Other Areas

⚠ indicates safety critical components.

× New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

❻

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
460	1B	*	G01-3724-08	CLUTCH ARM SPRING (B)		
461	1B	*	G01-3725-08	CLUTCH SP		
462	1B		G02-0913-08	PACK SPRING		
463	2A	*	G02-1043-08	AZIMUTH SPR		
465	2A	*	G11-2117-08	HEAD WIRE CLAMP		
466	1B	*	G11-2205-08	TUBE		
467	2B		G16-0791-08	REFLECT SEAL		
468	2A		G01-3739-08	HEAD CHASSIS SP		
470	1C		J19-3652-08	CABLE HOLDER		
471	2A	*	J19-3709-08	HEAD BASE		
472	2A	*	J21-6135-08	HEAD RETURN PLATE		
473	2A	*	J21-6199-08	HEAD PLATE ASSY		
474	2A		J42-0183-08	REEL BUSH		
475	2B	*	J69-0086-08	FILAMENT TAPE		
476	1A	*	J21-6178-08	BRACKET (L) (A MECHA)		
477	2C	*	J21-6179-08	BRACKET (R) (B MECHA)		
478	1A,2C	*	J31-0851-08	EJECT COLLAR		
AA			N19-1316-08	POLY WASHER		
AB			N19-1354-08	NYLON WASHER		
AC			N19-1355-08	NYLON WASHER		
AD		*	N19-1384-08	POLY WASHER		
AE		*	N19-1385-08	POLY WASHER		
AF		*	N19-1386-08	POLY WASHER		
AG		*	N19-1387-08	TEFRON WASHER		
AH		*	N19-1388-08	POLY WASHER		
AK			N09-2900-08	SCREW		
S			N09-1497-08	TAP TITE SCREW		
T			N09-2871-08	TAPPING SCREW		
V			N09-2876-08	HEAD SCREW		
W			N09-2901-08	BIND TAP TITE SCREW		
X		*	N09-3112-08	AZIMUTH SCREW		
XA		*	N09-3135-08	BIND TAP TITE SCREW 2.6*6		
Y			N19-1287-08	POLY WASHER		
Z			N19-1288-08	POLY WASHER		
480	1C,2C	*	S74-0033-08	REC SWITCH		
481	1C,2C	*	S74-0042-08	PLAY SWITCH		
484	1C	*	T94-0233-08	SOLENOID ASSY		
485	1C,2C		T95-0125-08	PHOTO INTERRUPTER		
MM	1C	*	T42-0687-08	MOTOR ASSY		
PH	2A		T31-0072-08	ROTATION HD(PB)KP-7442-CS-8352		
RPEH	1A		T39-0027-08	ROTATION HD(RP)KC-9242-CB-8354		

L : Scandinavia K : USA P : Canada R : Mexico
Y : PX (Far East, Hawaii) T : England E : Europe G : Germany
Y : AAFES (Europe) X : Australia M : Other Areas

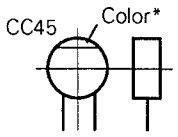
⚠ indicates safety critical components.

PARTS LIST

CAPACITORS

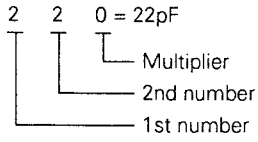
CC 45 TH 1H 220 J
1 2 3 4 5 6

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, ect.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance



• Capacitor value

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001µF
103 = 0.01µF



• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = -470 ± 60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -20	+80 -20	+100 -0	More than 10µF - 10 ~ +50 Less than 4.7µF -10 ~ +75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

1st word \ 2nd word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	-
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	-

• Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension (Chip capacitors)

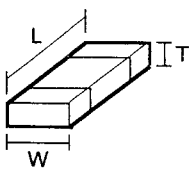
Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

RESISTORS

• Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B,F)

Dimension



Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1

• Carbon resistor (Normal type)

(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

X-E9

SPECIFICATIONS

Track ..... 4-track, 2-channel stereo
Recording system .... AC bias system (Frequency : 105kHz)
Heads
A deck Playback head 1
B deck Playback / Recording head 1
Erasing head 1

Motors
A deck 1
B deck 1
First winding time ..... Approx. 110seconds (C-60 tape)

Frequency response
Normal tape ..... 35Hz~17,000Hz, ±3dB
CrO2 tape ..... 35Hz~18,000Hz, ±3dB
Metal tape ..... 35Hz~18,000Hz, ±3dB

Signal to noise ratio
Dolby C NR ON ..... 73dB (Metal tape)
Dolby B NR ON ..... 66dB (Metal tape)
Dolby NR OFF ..... 58dB (Metal tape)
Harmonic distortion ..... Less than 3.2%
(315Hz, 3rd H.D., 250nWb/m, metal tape)
Wow & Flutter ..... 0.09% (W.R.M.S.), ±0.19% (DIN)

GENERAL
Dimensions ..... W : 270mm(10-5/8")
H : 124mm(4-7/8")
D : 258mm(10-3/16")
Weight (Net) 2.8kg (6.2lb)

KENWOOD follows a policy of countinuous advancements in development. For this reason specifications may be changed without notice. US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

Note :
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

KENWOOD CORPORATION
14-6, Dogenzaka 1-chome, Shibuya-ku, Tokyo 150, Japan
KENWOOD SERVICE CORPORATION
P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90810-5745, U.S.A.
KENWOOD ELECTRONICS CANADA INC.
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8
KENWOOD ELECTRONICS LATIN AMERICA S.A.
P.O. BOX 55-2791, Piso 6 Plaza Chase, Cl. 47 y Aquilino de la Guardia, Panama, Republic de Panama
TRIO-KENWOOD U.K. LIMITED
KENWOOD House, Dwight Road, Watford, Herts., WD1 8EB United Kingdom
KENWOOD ELECTRONICS BENELUX N.V.
Mechelsesteenweg 418 B-1930 Zaventem, Belgium
KENWOOD ELECTRONICS DEUTSCHLAND GMBH
Rembrücker-Str. 15, 63150 Heusenstamm, Germany
TRIO-KENWOOD FRANCE S.A.
13 Boulevard Ney, 75018 Paris, France
KENWOOD ELECTRONICS ITALIA S.p.A.
Via G. Sirtori, 7/9 20129 Milano, Italy
KENWOOD ESPAÑA S.A.
Bolivia, 239-08020 Barcelona, Spain
KENWOOD ELECTRONICS AUSTRALIA PTY. LTD. (A.C.N. 001 499 074)
P.O. BOX 504, 8 Figtreel Drive, Australia Centre, Homebush, N.S.W. 2140, Australia
KENWOOD & LEE ELECTRONICS, LTD.
Unit 3712-3724, Level 37 Tower 1, Metroplaza, 223 Hing Fong Road, Kwai Fong N.T. Hong Kong
KENWOOD ELECTRONICS SINGAPORE PTE LTD.
No. 1 Genting Lane #07-00, KENWOOD Building, Singapore, 1334